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Analysis of Factors Influencing Malpractice Reporting Considering the Spectatorship Phenomenon Using Structural-Interpretive Modeling and MicMac Analysis

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ABSTRACT

The aim of this study is to identify and classify the factors influencing the reporting of malpractice considering the phenomenon of spectatorship, using the structural-interpretative methodology and MicMac analysis. The present study is developmental in terms of its objective, qualitative in terms of data, and document-based in terms of data collection. The research method is analytical-descriptive. The statistical population of this study consists of college faculty members, employees, and managers of certified public accounting institutions in the Tehran Stock Exchange. In this research, the snowball method was used and information was collected from 15 academic and practitioner experts through interviews and filling out questionnaires. In the first step, the dimensions and indicators of the malpractice reporting model were extracted from the theoretical literature, taking into account the phenomenon of spectatorship, and validated through expert interviews. The result of this phase was 14 indicators in the form of four main dimensions. In the next step, structural-interpretative modeling and MicMac analysis were used to determine the relationship and order between the dimensions and indicators and to create a structural model. The research results led to the design of an integrated model of malpractice reporting considering the phenomenon of spectatorship on nine levels, where among the 14 determinant indicators of malpractice reporting considering the phenomenon of spectatorship, the ethical-cultural dimensions, the individual personality factors and the administrative-managerial, phenomenon of spectatorship were identified as the most important dimensions, and the organizational culture indicator was recognized as the most influential and thus the most fundamental indicator.

Keywords: Malpractice Reporting, Spectatorship Phenomenon, MicMac analysis

1. Introduction

Financial malpractice poses a threat to an organization's status and its interactions with external stakeholders such as customers, suppliers, shareholders, and business partners. Consequently, malpractice can lead to significant financial damage. Malpractice and major financial scandals in recent years have had a devastating impact on a large number of stakeholders, including shareholders, employees, creditors, and other interested parties (Bahrami Rahnama & Banimohad, 2019).

Malpractice reporting is one of the monitoring mechanisms aimed at detecting illegal and unethical activities within an organization (organizational malpractice) carried out by current or former members of the organization who are in a position to report such activities to a limited extent. Reporting malpractice can be considered an ethical act that plays an important role in preventing organizational malpractice. Therefore, identifying and better understanding the factors associated with the reporting of misbehavior is an important area of research (Bahrami Rahnama & Banimohad, 2019).

One such factor that has garnered considerable attention is the phenomenon of spectator, which refers to the presence of spectators or witnesses to misconduct. Spectator brings a unique dynamic to the reporting process, as individuals can be influenced by social, cultural, and organizational factors when deciding whether to report malpractice they have witnessed. Understanding how spectators influence the reporting of malpractice is critical to the development of comprehensive frameworks and interventions aimed at improving reporting behavior.

In this study, we aim to analyze the factors that influence the reporting of malpractice, taking into account the phenomenon of spectatorship. We use a multi-method approach that integrates structural-interpretive modeling and MicMac analysis to investigate the complex relationships between different factors and their effects on reporting behavior.

By examining both the structural and interpretive dimensions of these factors, we seek to provide a comprehensive understanding of the underlying mechanisms that drive corporate malpractice reporting decisions.

By shedding light on the complex interplay of factors involved, we aim to enable organizations to take proactive measures that promote ethical behavior and mitigate the risks associated with misconduct.

In recent decades, global financial markets have faced significant fluctuations and uncertainties. These fluctuations, particularly evident in the returns on invested assets, have raised deep concerns among investors and financial analysts. In this context, novel approaches such as nonlinear modeling and the emergence of chaos theory have replaced traditional linear methods. The use of these models, based on more precise and comprehensive analyses of the behavior of complex economic and social systems, has led to significant advancements in predicting and understanding financial variables. Structural Interpretive Modeling (ISM) is one of the effective tools in this field, as it has better explained the behavior of nonlinear systems by considering complex and feedback relationships among variables. Financial misconduct reporting, which involves disclosing illegal and unethical activities within organizations, still faces significant challenges. In Iran, although some research has been conducted in this area, empirical evidence on the factors influencing internal reporting of financial misconduct by employees—especially in situations where they encounter the bystander phenomenon—remains limited. The bystander phenomenon refers to situations in which individuals, upon witnessing unethical or illegal misconduct, refrain from reporting it due to reasons such as fear, uncertainty, or lack of support. Given the enactment of new laws and national support for internal financial misconduct reporting, it is essential to examine this phenomenon more thoroughly. A better understanding of the reasons behind the bystander phenomenon and its influencing factors can lead to the development of more practical strategies to enhance reporting and reduce financial misconduct within organizations (Kordestani & Rajabdorri, 2021). According to the conducted studies, no research has yet identified and ranked the factors influencing misconduct reporting with regard to the bystander phenomenon using the Structural Interpretive Modeling (ISM) methodology and MICMAC analysis. This study seeks to identify strategies that, through a better understanding of the factors affecting misconduct reporting in relation to the bystander phenomenon, can provide deeper insights into financial statement elements for individual and institutional investors intending to make short-term

and long-term investments. This will enable them to select stocks with higher potential returns. The study aims to examine these factors and propose solutions to improve the reporting process.

Table 1: Conflict of studies

Indicator	Direct relationship	Inverse relationship
Inappropriate organizational culture	Kordestani & Rajabdorri (2021)	Namazi & Ebrahimi (2016), Aline (2019)
Inappropriate moral judgment	Aline (2019)	Namazi & Ebrahimi (2016)
Lack of legal and social support	Gao et al (2016)	Kordestani & Rajabdorri (2021)
Weakness in organizational identity	Kordestani & Rajabdorri (2021)	Gao et al (2016)
The lack of strong evidence	bolou & akbarian shurkaei (2017)	Bolou et.al (2016)

Theoretical foundations of the research

Reporting Violations

Reporting violations refers to the disclosure of breaches of laws, regulations, organizational directives, and rules, as well as the exposure of the misuse of power and influence within an organization. This can lead to the prevention of harm to the public and help ensure that organizational security and health are not compromised (Lee, Gladyse, & Xiao, 2018).

2-1-1 Motivation for Reporting Violations

Before engaging in reporting violations, individuals analyze the cost-benefit equation of reporting corruption. If they perceive protective measures as inadequate and the legal incentives provided as disproportionate, they tend to avoid this action, preferring not to jeopardize their normal and secure lives. Therefore, to leverage the potential of these individuals, it is necessary to implement protective measures (preventive actions) against risks and to establish significant rewards (positive actions) to motivate and purposefully encourage them to report violations. The reward system plays a crucial role in maximizing reports related to misconduct through targeted motivational incentives. The significant impact of reward systems is clearly evident in the experiences of other countries. According to the annual report of the U.S. Securities and Exchange Commission, the number of whistleblowers increased after the implementation of incentive-based reward system laws. (Bahrami Rahnama & Banimohad, 2019).

2-1-2 Factors Influencing the Observation of Violations

In recent years, the detection of financial violations has become a significant concern for the general public. However, in the absence of preventive mechanisms and financial and administrative transparency, this issue has been on the rise, with several cases observed in the country. Recent fraud incidents in Iran, with all their negative economic, political, and social consequences and their damaging impact on public trust, have sounded the alarm for officials, particularly accountants and auditors. These incidents serve as a warning that fraud never disappears and continuously seeks to plunder income, assets, and jobs. An examination of fraud statistics in countries similar to Iran indicates that approximately 15% of their gross domestic product is lost to fraudsters. What intensifies concerns about fraud in Iran is that accidental discovery remains the most common method of fraud detection, highlighting the inefficiency of other fraud detection and prevention methods. Therefore, the accounting profession and legislative bodies have strived to make fraud reporting by employees a fundamental part of organizational culture (Alleyne et al., 2013).

2-1-3 Factors Affecting Information Disclosure

Reporting or disclosing errors in the field of auditing is a voluntary action in which auditing staff report unethical behaviors (such as lack of independence) committed by their colleagues to internal or external entities, regardless of existing standards and legal requirements, in order to prevent such errors from occurring (Alleyne et al., 2013).

Factors such as the Five-Factor Personality Model, self-efficacy, and cognitive personality traits are seen as individual characteristics of whistleblowers. Contextual variables like ethical leadership, manager-

employee relations, peer support, ethical culture, and ethical intensity also play an important role in the internal financial misconduct reporting decision-making process (Karimi et al., 2023).

2-2 The Bystander Effect

The bystander effect refers to the reduced likelihood of an individual's participation and helping behavior when other people are present or aware of the situation (Latale & Darley, 1968; Darley & Latane, 1970). Latane and Darley (1968) first experimented with the bystander effect in response to the public assault and murder of Kitty Genovese in New York City. On March 13, 1964, in a busy street, a woman was stabbed to death. Reports revealed that 38 people had observed the murder from their apartments, but none attempted to intervene. The concern grew when it was revealed that the attack lasted about 30 minutes, and not a single person tried to contact the police until the assault ended. Darley and Latane (1968), dissatisfied with media, religious, and scientific explanations for the apparent indifference of the witnesses, decided to test their hypothesis about the bystander effect. They hypothesized that the diffusion of responsibility might explain the behavior. They argued that the responsibility to act and the guilt of inaction were shared among all the observers. Moreover, each observer likely assumed that another bystander was taking action (Bolou & Akbarian Shurkaei, 2019).

According to Graham's (1986) whistleblowing model and the theories based on it, the perception of responsibility is key in determining whistleblowing behavior. Specifically, responsibility is one of the three factors that affect the decision to report fraud. Responsibility can either be "explicitly defined in a person's job description or considered part of the duties of their role, or implicitly arise from an individual's sense of personal responsibility, social responsibility, or moral commitments" (Curtis, 2006).

At first glance, it may seem unsurprising that the bystander effect occurs in the context of accounting fraud disclosure, as whistleblowing could be seen as a typical helping behavior. However, several features of the context of whistleblowing differentiate it from the common situations studied in bystander effect research. First, the bystanders, as colleagues, usually know each other. Additionally, the perpetrator is likely known to both the bystanders and the potential whistleblowers. Moreover, while most bystander effect studies involve contexts where the bystander's behavior is clearly "helpful" (e.g., picking up a pen dropped in an elevator, changing a flat tire, or assisting someone in a medical emergency), the whistleblowing context introduces more uncertainty. Often, the whistleblower initiates a process that leads to consequences such as job loss, a drop in stock prices, or the loss of employees' wealth. Therefore, not everyone views whistleblowing as a helping behavior. Some may even consider it a betrayal that harms the organization and its employees. These considerations have prompted studies in this area, which are discussed below. After the incident involving Kitty Genovese and the lack of a convincing explanation for the bystanders' inaction, Darley and Latane (1968) conducted a study, which they published in "Bystander Intervention in Emergencies: Diffusion of Responsibility." In their research, they used an experimental environment to test the effect of the number of bystanders on an individual's sense of responsibility to help. They used groups of 3, 2, and 6 participants, with 26, 13, and 13 participants, respectively. They found that the presence of bystanders reduced each individual's sense of personal responsibility and slowed the reporting speed. Men reported slower than women. They concluded that the inaction of bystanders in real emergency situations is often described as "insensitivity," "alienation," and "anomaly," while their experiment suggested that bystanders' reactions to other observers might be a better description than indifference to the victim (Bolou & Akbarian Shurkaei, 2017).

2-3 Structural Analysis Using the MICMAC Method

Structural analysis is a tool for organizing a large number of ideas. It explains the system by using a matrix that combines the main components of the system. Through this method, we can identify the key variables of a system that both have the most influence on other variables and are the most dependent on other variables. Impact analysis is one of the methods used in structural analysis and is a set of methods and tools employed as a complement to methods such as surveys or Delphi in future studies. This method is an analytical approach to examining the impact of an event within a set of forecasts. Most events and developments are somehow related to other events and

developments. This method attempts to predict the impact or likelihood of the impact of one event on another. Tools like cross tables are used in this method to systematically infer the interrelationships among various variables in order to understand the potential future developments arising from the direct and indirect impacts of one event or variable on another. Impact analysis methods are typically used in analytical tasks that, due to the divergence of study areas, lack reliable models based on theory, and are too complex for pure and convincing system analysis. Normally, performing structural analysis requires the presence of a committee of experts and practitioners from a given field. The MICMAC method for structural analysis is one type of impact analysis method that uses cross tables but, unlike other methods, does not calculate probabilities. Therefore, this method does not calculate the probability of one variable affecting another but provides the intensity and existence of the relationship between two variables. The existence and intensity of the relationship between two variables are determined during the collective thinking process based on the collective opinions of experts and specialists, and the analytical steps are only designed to summarize and present results. To carry out the above steps, specialists in focus groups, based on their experience and knowledge, first provide a list of key variables and then, depending on the number of key variables, rate the cells of an n×n matrix of influencing variables.1. This matrix is called the direct effects matrix, where each cell m_{ij} represents the level of impact of variable i on variable j. The value of this cell can be 0, 1, 2, 3, or 4 (P), depending on the level of impact. In this method, the number 1 represents weak effects, 2 represents medium effects, and 3 represents strong effects. The number 4 indicates that, according to the experts and scholars participating in the study, the impact between two variables is probable, meaning that there may or may not be an influence or dependency. By modifying the cells with code 4 or P during the software analysis stage, probable impacts can also be identified. Then, in the third stage, the impact level can be determined using one of two methods: direct or indirect. In the direct method, the direct impact of variable K on other variables is the sum of all values in row K of matrix M, and the dependency of variable K on other variables is the sum of the values in column K. In this way, the ranking of σ_D^M and σ_1^M of each variable is obtained, and by sorting values, the importance of each variable is calculated. The following formulas represent the mathematical process for this procedure:

Relation (2-1)

$$(K = 1.2 \ldots . n) I_k = \sum_j^n = 1 m_{ij}$$

$$(K = 1.2 \ldots . n) D_k = \sum_j^n = 1 m_{ik}$$

After this stage, indirect effects can be identified using the MICMAC method. In this method, indirect impact refers to the spread or transmission of the effect of one variable on another through an intermediary variable. In social network analysis literature, this is referred to as calculating first-degree distances or identifying paths between two variables or nodes. First-degree distances mean that the spread or transmission of one variable's effect on another passes through only one intermediary variable and not more. In practice, second-degree indirect effects are usually of moderate or weak intensity, and therefore, calculating higher-degree effects (e.g., indirect transmission of one variable's effect through two or more intermediary variables) can be disregarded in a systems approach. However, in the network analysis literature, calculating multiple paths with the help of various network analysis indicators can provide additional relevant information (Talebian et al., 2017).

Research background

Kordestani & Rajabdorri (2021) conducted a study titled "Pattern of Factors Affecting Internal Reporting of Financial Malpractice with Emphasis on the Phenomenon of Spectatorship" which investigated the above topic. The aim of this research was to establish a pattern of factors influencing internal reporting of financial malpractice. A combination of methods was used to answer the research question, including Meta-synthesis, content analysis, and semi-structured interviews with experts (Delphi technique). A total of 61 articles relating to the research topic were subjected to content analysis and interviews were conducted with 14 experts. The analysis revealed that five individual constructs (consisting of 19 components, such as lack of courage and fear of evaluation and judgment), interpersonal constructs (consisting of 4 components, such as unfamiliarity with social principles of behavior

and lack of social responsibility), ethical-cultural constructs (consisting of 9 components, such as lack of piety and spirituality and lack of honesty and integrity), administrative-managerial constructs (consisting of 12 components, such as lack of legal and social support and organizational transparency), and characteristics of misconduct (consisting of 7 components, such as multiple informed individuals and uncertainty about the occurrence of misconduct) influence internal reporting of financial malpractice considering the phenomenon of spectator. Moreover, each construct has its components, and each component also influences spectator and internal reporting of financial malpractice.

Varaste et al (2021) investigated "Auditors' propensity to report malpractice based on the social cognitive theory" The current research is descriptive and correlational. Auditors working in audit organizations and private audit firms in 2019 formed the research population, and the sample included 304 auditors selected by random sampling. The instrument used in this study was a questionnaire. Structural equation modeling (SEM) and LISREL software were used for data analysis and hypothesis testing. The research findings showed that the personality traits tested (self-efficacy and external source of control) have a positive and significant impact on the reporting of malpractice by auditors. In addition, the magnitude of the indirect effects of these variables on job satisfaction (a mediating variable) increased, with the indirect effect of self-efficacy on malpractice reporting being significant and the indirect effect of external sources of control on malpractice reporting being non-significant. The results of the study offer a new perspective on how to improve the position of malpractice reporting in organizations and audit institutions.

(Dibakia et al., 2022) investigated the "impact of accountants' awareness and ethical judgment on the propensity to report financial malpractice, with a focus on the role of perceived ethical intensity." This study is a survey. The sample consists of 173 accounting graduates employed in various sectors of government and private companies. The required data for this research was collected by completing questionnaires in 2020 using non-probability sampling. The results of hypothesis testing using Partial Least Squares Structural Equation Modeling (PLS-SEM) show that ethical awareness has a positive and significant influence on the ethical judgment of accountants and that perceived ethical intensity moderates this relationship. In addition, the results show that accountants' ethical judgment has a positive and significant influence on their propensity to report financial malpractice to both internal and external authorities and that this relationship is not moderated by perceived ethical intensity. Overall, the results suggest that the normative model of ethical decision-making leads to some degree to a better understanding of the factors that influence financial malpractice reporting. Therefore, prioritizing ethics and ethical principles is a major concern for auditors at various levels in order to create a suitable environment for improving the performance of the auditing profession.

(Alleyne et al., 2017) conducted a study entitled "Perceptions, Predictions, and Consequences of Whistleblowing among Accounting Personnel in Barbados" to examine the perceptions, attitudes, and consequences of whistleblowing and to predict the internal and external motivations for whistleblowing using Graham's (1986) model. They conducted a survey of corporate accounting staff and collected data from 282 questionnaires to test the hypotheses. The results, which indicate that most of them perceive whistleblowing as an ethical issue, suggest that participants have limited awareness of whistleblowing laws. In addition, individual responsibility has a significant impact on internal whistleblowing motivation, while personal cost significantly influences both internal and external whistleblowing motivation.

(Oran & Ünsar, 2019) investigated the "effects of leadership styles, organizational justice, and organizational trust on whistleblowing" They showed that behavioral and leadership patterns of managers play an important role in encouraging employees to report malpractice by their colleagues. They found that organizational trust and justice are important factors in the success of organizations in reducing misconduct and increasing organizational productivity. According to them, an increase in whistleblowing by employees is a sign of organizational management's success in leading and managing employees.

In order to achieve the research objectives, the following questions were formulated:

- What are the factors that influence the reporting of misbehavior considering the spectator phenomenon?

- How can the structural interaction matrix be formed between the factors influencing the reporting of malpractice considering the spectator phenomenon?

- How can the interpretive structural model be used to determine the relationship between the factors

influencing the reporting of malpractice considering the spectator phenomenon?

- How can the factors influencing misbehavior be classified into different groups using MicMac analysis?

Research Methodology

The aim of the study is to analyze the factors influencing malpractice reporting considering the spectator phenomenon by using structural interpretation modeling and MicMac analysis. The population of the study includes students in the final year of the master's degree program in accounting, listed companies, and licensed auditing institutions in Tehran. A snowball method was used and information from 15 academic and professional experts was collected through interviews and filling out questionnaires. The selection and interviews with the experts were conducted until theoretical saturation was reached in the initial phase of the research. Both library and field research methods were used to cover different aspects of the study.

Table 2: Factors affecting the reporting of violations with regard to the phenomenon of spectatorship

Dimension	Indicator	Source
moral - cultural	Culture organizationally inappropriate	(Kordestani & Rajabdorri, 2021), Namazi & Ebrahimi (2016), Alleyne et al (2019)
	Judgment moral Inappropriate	
	sensitivity moral down	
Agents individual-personality	weakness Stability a personality	Liu et al. (2018)
	Decisive not be and weakness	
	weakness of will Self- control	
	Duty anonymity	
	weakness Courage And courage	
official -managerial	was not supported by Legal And Social	Kordestani & Rajabdorri (2021), Gao and colleagues (2016)
	weakness in identity Organizational	
	not have commitment to Organizational	
	atmosphere Inappropriate Organizational	
	your dissatisfaction with a job	
	was not education-appropriate	
Characteristic Violation	strong not be evidence communication	Blue and Akbarian Shurkaei (2016); Blue et al. (2015)
	insufficient of consequence violation	
	hit And clause political cheater	

Table (3) Research steps

Identifying dimensions and indicators The first phase explored the theoretical underpinnings of the research and conducted interviews with 15 academic and professional experts to extract effective factors for reporting ¬. Violations¬ With attention to the phenomenon There is a spectator step	Step one: Identifying dimensions and indicators
So From the ID Component, I See In Turn To Come To Do This Components¬ At Matrix Structural Relationships Internal Variables Can Be To This Matrix A Matrix, To Dimensions Variables Can Be That At Row And Column First These Variables To Order Mention Can Be	Secondly: determination of the relationship between dimensions and indicators I See
With Attention to the Phenomenon The Audience Then By Determining Relationships And Level Variables Can Be¬ They Particle For Direct Object To Design A Model Drawing To That Is The Purpose First Variables On By Level From Top To Bottom Setting To Be¬ And With Using Level Classification, Diagram With Title Model Report Violation I See With Attention To Phenomenon Drawing Audience Can Be To Be	third step: Draw the network interactions dimensions and report indicators violations I See

In this research, the first phase identified the dimensions and factors influencing the reporting of malpractice considering the spectator phenomenon by using previous research, the Delphi method, the distribution of questionnaires, and the aggregation of individuals' opinions. In the second phase, the analysis of the interaction between the factors influencing the reporting of malpractice considering the spectator phenomenon was conducted using the structural interpretive modeling method and MicMac analysis.

Research Findings

Considering the importance of internal reporting in detecting and preventing corporate misconduct, it is necessary to gain a better understanding of the internal reporting process of financial misconduct and the factors influencing its improvement. Despite the importance of the factors influencing the reporting of spectator misconduct, no comprehensive and practical model for understanding the relationships between the dimensions and prioritizing the factors influencing the reporting of spectator misconduct has been presented to date. Therefore, key dimensions and indicators were identified in this study through a review of the literature on the factors influencing spectator reporting of malpractice. Subsequently, the model obtained was validated based on the opinions of experts in the field. Finally, using the Interpretative Structural Modeling (ISM) approach, the relationships between the dimensions and influential indicators on the reporting of misbehavior were identified, taking into account the spectator phenomenon, and their interaction network was presented.

This study was conducted in two main phases. In the discovery phase, relevant literature was examined and studied to understand the topic. In this phase, important articles in the field, including those by (Kordestani & Rajabdorri, 2021), (Namazi & Ebrahimi, 2016), (Alleyne, 2016), (Liu et al., 2018), (Blue & Akbarian Shurkaei, 2017), Blue et al. (2016), were consulted to extract the variables that affect the reporting of misbehavior considering the spectator phenomenon. Meetings were then held and interviews with experts were conducted to contextualize the model and address the requirements and conditions of the organization under study. The extracted variables were validated. Finally, in the design phase, the Structural Interpretative Modeling (ISM) method was applied to establish the relationship between the elements of the malpractice reporting model, taking into account the spectator phenomenon, and to obtain a structural model. This method is an interactive learning process in which a number of different and interrelated elements are structured into a comprehensive and systematic model. This method helps to understand and guide complex relationships between the elements of a system. The model obtained with this method shows a structured representation of a complex topic, system, or field, indicating a carefully designed pattern. It can therefore be said that this method not only provides insight into the relationships between the elements of a system but also builds a structure based on the importance or influence of the elements on each other. This method is interpretative because a group judgment determines whether or not there are relationships between these elements. It is structural because the basis of the relationships is an overall structure extracted from a complex set of variables. It is also a modeling technique because specific relationships and the overall structure are represented in a diagrammatic model (Firouzjaeiyan et al., 2013).

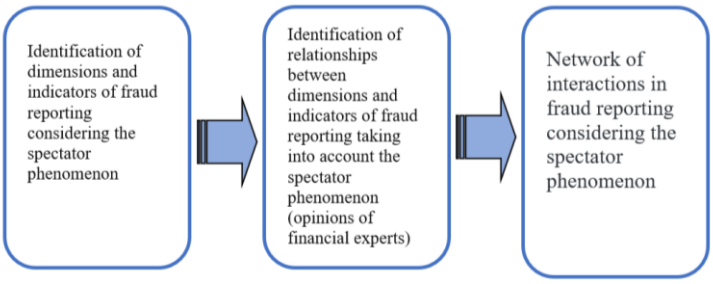

Figure (1) Conceptual model of the research

This study identified and modeled the dimensions and indicators that influence the reporting of malpractice considering the spectator phenomenon by examining the literature on this topic. According to the structural-interpretive method, the criterion for determining the relationship between each pair of desired ordered components was the achievement of consensus among the majority of experts. This criterion indicates the presence or absence of a relationship between them. To implement the model, the following three main steps are required, which are described below:

1) Identifying the dimensions and indicators that influence the reporting of malpractice, taking into account the spectator phenomenon.
2) Determining the conceptual relationships between dimensions and indicators using the structural-interpretative method (forming a structural interactive matrix, forming a performance matrix, and determining the relationships and levels between dimensions and indicators).
3) Draw the interaction network of dimensions and indicators that affect the reporting of violations according to the phenomenon of viewership (Azar et al., 2021).

Investigation of the first research question

Research question 1: What factors influence whistleblowing, taking into account the spectator phenomenon?

First step: Identification of dimensions and indicators

In this study, the dimensions and indicators that influence whistleblowing considering the spectator phenomenon were identified by reviewing the theoretical literature and relevant articles. Subsequently, the identified dimensions and indicators were evaluated and validated by 15 professional and academic experts using the Delphi method. The Delphi method is a technique for structuring a process in a group that enables the group as a whole to solve a complex problem. The main objective of the Delphi method is to achieve the most reliable consensus among the experts with a reduced number of targeted questionnaires and controlled feedback.

At this stage, the average scores obtained were calculated by dividing the sum of the products of the number of individuals in Table 4 by the scores considered (5 for very high, 4 for high, 3 for moderate, 2 for low, and 1 for very low). Individuals who scored above the average threshold of 3 can be considered as one of the factors influencing whistleblowing considering the spectator phenomenon according to experts and professionals. Since all questions except questions 7, 11, and 16 received a score above 3, the validity of the criteria is confirmed and only the criteria of anonymity, lack of organizational commitment, and insufficient awareness of the consequences of misconduct are excluded from the calculations.

Table 4: Average values of factors influencing breach reporting considering spectator phenomenon

Row	The importance of the factor in changing the reporting of violations according to the spectator phenomenon	very much	Much	medium	Low	very little	Average
1	Culture organizationally inappropriate	7	4	2	1	1	4
2	Judgment moral Inappropriate	10	4	0	1	0	4.53
3	sensitivity moral below	10	4	0	0	1	4.46
4	weakness stability a personality	10	4	0	0	1	4.46
5	Resolute non-being and weakness	8	5	2	0	0	4.4
6	weakness self-control	8	4	3	0	0	4.33
7	duty anonymity	4	1	1	1	8	2.46
8	weakness courage and bravery	8	5	2	0	0	4.4
9	was not support legal and social	9	5	1	0	0	4.53
10	weakness in identity organizational	7	4	4	0	0	4.2
11	not have commitment organization	4	1	1	1	8	2.46
12	atmosphere Inadequate organizational	9	5	1	0	0	4.53
13	your dissatisfaction with a job	10	4	0	1	0	4.53
14	was not education Adequate	9	4	1	1	0	4.4
15	powerful not be evidence	9	4	2	0	0	4.46
16	notification insufficient of consequence violation	4	1	0	0	10	2.26
17	meet and clause political fraudster	7	6	2	0	0	4.33

For example, the calculation of the average scores to four decimal places for question twelve (questionnaire number 12) is as follows:

$$\frac{5??9+4??5+3??1+2??0+1??0}{15}=4.53$$

Therefore, the dimensions and indicators that influence whistleblowing considering the spectator phenomenon were summarized by a group consensus among the experts into four dimensions and fourteen indicators, as shown in Table (2)

Examination of the second and third questions:
How can the structural interaction matrix between the factors influencing fraud reporting behavior be formed considering the spectator phenomenon?

How can the relationship between the factors influencing reporting behavior be determined using an interpretative structural model taking into account the spectator phenomenon?

Second step: Determining the relationship between the dimensions and indicators

Once the main components have been identified, the next step is to incorporate these components into the structural matrix of internal relationships between the variables. This matrix is a matrix of dimensions and variables, with the variables listed in the first row and column. Then, the pairwise relationships between the variables are labeled with specific symbols (Ravi & Shankar, 2005). These symbols include:

V: The factor in row i leads to the realization of the factor in column j.

A: The factor in column j leads to the realization of the factor in row i.

X: Both factors in row and column lead to the realization of the other (factors i and j are in a reciprocal relationship).

O: There is no relationship between the factor in row and column.

Formation of the structural self-interaction matrix (SSIM)

The structural self-interaction matrix of the dimensions and indicators that influence whistleblowing, taking into account the spectator phenomenon, is formed and compared on the basis of four conceptual relationship states. This matrix is filled in by professional and academic experts. The information obtained is summarized based on the structural-interpretative modeling method and the final structural self-interaction matrix is created.

The logic of structural-interpretative modeling works with non-parametric methods and is based on the principle of mode in frequencies. A final sign is entered in the table, which is approved by the majority of experts. Therefore, Tables (5 and 6) show the relationships between the dimensions and indicators influencing whistleblowing considering the spectator phenomenon based on the opinions of 15 experts.

Table (5) Matrix self-interaction structural the dimensions of whistleblowing considering the spectator phenomenon

j / i	Moral- cultural	Agents individual-personality	official managerial-	feature Violation
Moral- cultural		A	O	V
Agents individual-personality			O	V
official- managerial				O
feature Violation				

Table Matrix (6) Self-interaction structural indicator Hi reporting violations by spectator phenomenon

j / i	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1		X	V	O	X	V	V	V	V	V	X	V	V	V
2			X	O	X	X	X	X	X	X	X	X	X	V
3				V	X	X	O	X	X	A	A	X	X	X
4					A	V	A	A	X	O	O	O	O	X
5						X	X	X	X	O	X	X	X	V
6							A	X	A	O	X	X	X	X
7								X	X	X	A	X	O	V
8									X	O	X	X	V	V
9										O	X	X	V	V
10											O	X	V	X
11												O	O	X

j / i	1	2	3	4	5	6	7	8	9	10	11	12	13	14
12													V	X
13														X
14														

Determining the initial reachability matrix (IRM)

In this phase, the structural self-interaction matrix is converted into a binary matrix; only zeros and ones are present in this matrix. To extract the reachability matrix, the symbols V and X in each row are replaced by the number one, and the symbols O and A in the structural self-interaction matrix are replaced by the number zero. After the transformation of all rows, the resulting matrix is the original reachability matrix.

Thus, at this stage, the structural self-interaction matrix is transformed into a binary matrix, and the initial reachability matrix is obtained.

If the symbol in cell ij is the letter V, this cell contains the number 1, and the complementary cell contains the number 0.

If the symbol in cell ij is the letter A, 0 is placed in this cell, and 1 in the complementary cell.

If the symbol in cell ij is the letter X, 1 is placed in this cell and 1 is also placed in the complementary cell.

If the symbol in cell ij is the letter O, 0 is placed in this cell and 0 is also placed in the complementary cell.

Table (7) Matrix Initial fulfillment of the dimensions of reporting violations according to the spectator phenomenon

j / i	Moral-cultural	Agents individual-personality	-official managerial	feature Violation
Moral- cultural	1	0	0	1
Agents individual-personality	1	1	0	1
official - managerial	0	0	1	0
feature Violation	0	0	0	1

Table (8) Matrix The final achievement of effective indicators for reporting violations according to the spectator phenomenon

j / i	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	1	1	0	1	1	1	1	1	1	1	1	1	1
2	1	1	1	0	1	1	1	1	1	1	1	1	1	1
3	0	1	1	1	1	1	0	1	1	0	0	1	1	1
4	0	0	0	1	0	1	0	0	1	0	0	0	0	1
5	1	1	1	1	1	1	1	1	1	0	1	1	1	1
6	0	1	1	0	1	1	0	1	0	0	1	1	1	1
7	0	1	0	1	1	1	1	1	1	1	0	1	0	1
8	0	1	0	1	1	1	1	1	1	0	1	1	1	1
9	0	1	1	1	1	1	1	1	1	0	1	1	1	1
10	0	1	1	0	0	0	1	0	0	1	0	1	1	1
11	1	1	1	0	1	1	1	1	1	0	1	0	0	1
12	0	1	1	0	1	1	1	1	1	1	0	1	1	1
13	0	1	1	0	1	1	0	0	0	0	0	0	1	1
14	0	0	1	1	0	1	0	0	0	1	1	1	1	1

After forming the initial accessibility matrix, internal consistency must be ensured. For example, if variable 1 leads to variable 2 and variable 2 leads to variable 3, then variable 1 must lead to variable 3. If this condition is not fulfilled in the accessibility matrix, the matrix must be adjusted and the missing relationships must be added. These adjustments are indicated by the symbol "1*".

Thus, after ensuring the internal consistency of the initial reachability matrix, the final reachability matrix

(FRM) for the dimensions affecting the reporting of malpractice due to the spectator phenomenon based on expert opinions is presented in Table (7), and the final reachability matrix for the indicators affecting the reporting of malpractice due to the spectator phenomenon is presented in Table (10).

Table (9) Reachability matrix the final dimensions of spectator phenomenon malpractice reporting

j / i	Moral-cultural	Agents individual-personality	official-managerial	feature Violation	Driving power
Moral- cultural	1	1*	1*	1	4
Agents individual-personality	1	1	1*	1	4
official- managerial	1*	1*	1	1*	4
feature Violation	0	0	0	1	1
The power of dependence	3	3	3	4	

Table (10) Matrix The final achievement of effective indicators for reporting violations according to the spectator phenomenon

j / i	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Driving power
1	1	1	1	1*	1	1	1	1	1	1	1	1	1	1	14
2	1	1	1	1*	1	1	1	1	1	1	1	1	1	1	14
3	0	1	1	1	1	1	0	1	1	0	1*	1	1	1	11
4	0	0	0	1	0	1	0	1*	1	0	1*	1*	1*	1	8
5	1	1	1	1	1	1	1	1	1	1*	1	1	1	1	14
6	0	1	1	0	1	1	0	1	1*	0	1	1	1	1	10
7	0	1	0	1	1	1	1	1	1	1	1*	1	1*	1	12
8	0	1	0	1	1	1	1	1	1	1*	1	1	1	1	12
9	0	1	1	1	1	1	1	1	1	0	1	1	1	1	12
10	0	1	1	0	0	0	1	0	0	1	1*	1	1	1	8
11	1	1	1	0	1	1	1	1	1	0	1	0	0	1	10
12	0	1	1	0	1	1	1	1	1	1	0	1	1	1	11
13	0	1	1	0	1	1	0	0	0	0	0	0	1	1	6
14	0	0	1	1	0	1	0	0	0	1	1	1	1	1	8
dependence power	4	12	11	9	11	13	9	11	11	8	12	12	13	14	

Determining the relationships and levels between dimensions and indicators

In order to determine the level and priority of the variables, the results and preconditions for each variable are determined. The outcome set of each variable includes the variables that are influenced by this variable, while the precondition set includes the variables that influence this variable. So we have:

Result set (effects or outputs): Includes the variable itself and the variables it influences.

Precondition set (causes or inputs): Includes the variable itself and the variables that influence it.

This process is carried out using the achievability matrix. After determining the outcome and precondition sets for each variable, the common elements between the two sets are determined. Variables whose common set with their outcome set is the same as their outcome set are assigned first-level priority. After these variables have been determined, they are removed from the table and the next table is formed with the remaining variables. In the second table, similar to the first table, we determine the variable of the first level and continue this process until we have determined the level of all variables.

This study identified the levels of dimensions and indicators that influence the reporting of misbehavior due to the spectator phenomenon. For the sake of brevity, the final results of these levels are presented in Tables (11 and 12).

Table (11) ***Level of determination Dimensions The model of reporting malpractice due to the spectator phenomenon***

Dimensions	The hand collection of Abi (by Y or exits)	The previous collection of (the influence of R or arrivals)	the collection Common	level
Moral- cultural	1,2,3	1,2,3	1,2,3	2
Agents individual-personality	1,2,3	1,2,3	1,2,3	2
official- managerial	1,2,3	1,2,3	1,2,3	2
feature Violation	4	1,2,3,4	4	1

Table (12) Determination level indicator Hi The model for reporting violations according to the spectator phenomenon

Indicator	Achievement set (impact or outputs)	Prerequisite set (functionality or inputs)	The collection Common	level
1	1	1	1	9
2	1,2,3,5,7,8,10	1,2,3,5,7,8,10	1,2,3,5,7,8,10	5
3	3	1,3	3	8
4	4,8	1,2,3,4,5,7,8	4,8	4
5	1,3,5,8	1,3,5,8	1,3,5,8	7
6	2,3,5,6,8,9,12	1,2,3,4,5,6,7,8,9,12	2,3,5,6,8,9,12	3
7	2,5,7,8,10	1,2,3,5,7,8,10	2,5,7,8,10	5
8	5,8	1,3,5,8	5,8	7
9	2,3,5,6,7,8,9,12	1,2,3,4,5,6,7,8,9,12	2,3,5,6,7,8,9,12	3
10	10	1,5,8,10	10	6
11	2,3,5,6,7,8,9,11	1,2,3,4,5,6,7,8,9,10,11	2,3,5,6,7,8,9,11	2
12	2,3,5,6,7,8,9,10,12	1,2,3,4,5,6,7,8,9,10,12	2,3,5,6,7,8,9,10,12	3
13	2,3,5,6,13	1,2,3,4,5,6,7,8,9,10,12,13	2,3,5,6,13	2
14	3,4,6,10,11, 12, 13,14	1,2,3,4,5,6,7,8,9,10,11,12, 13, 14	3,4,6,10,11,12, 13,14	1

Examination of the fourth question

Fourth question: How can effective factors be categorized into different groups using MicMac analysis?

Step Three: Drawing the interaction network of dimensions and effective indicators for reporting misbehavior considering the spectator phenomenon

Once the relationships and levels of the variables have been determined, they can be represented in a model. For this purpose, the variables are first ordered from top to bottom based on their levels. Based on the hierarchy created, a diagram called a Model for reporting misbehavior considering the spectator phenomenon is created. In this diagram, the fourth dimension (misbehavior feature) identified as the first level is placed on the first level of the diagram and similarly, the other dimensions are placed on the subsequent levels of the diagram.

These diagrams are shown in figures (2 and 3).

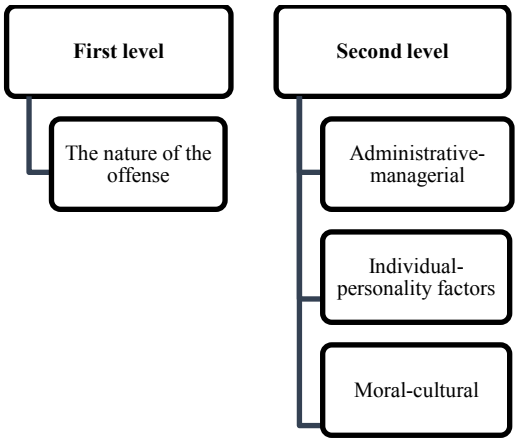

Figure 2: Model integrated dimensions reporting violations according to the phenomenon of spectators

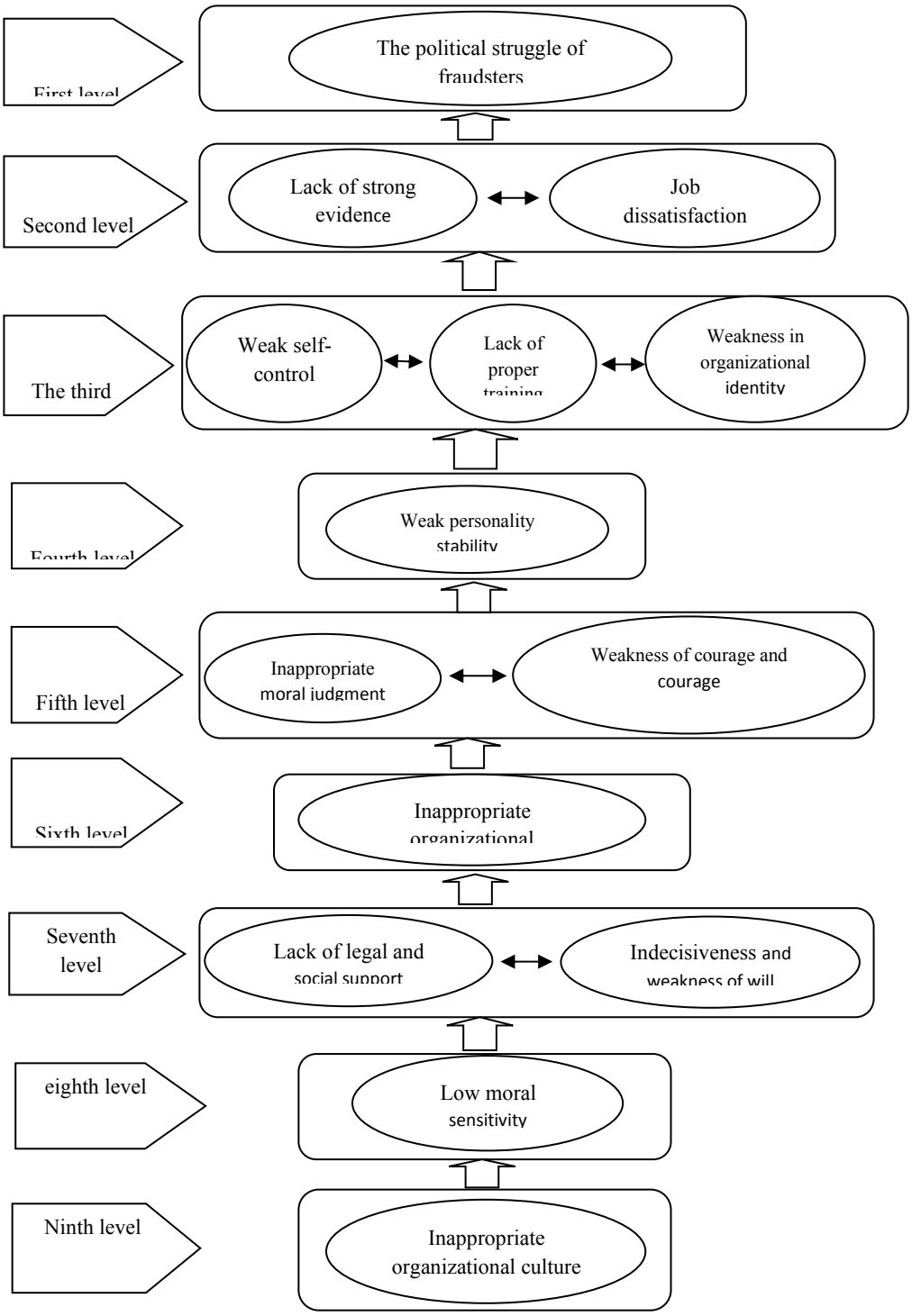

Figure 3: The model Integrated indicators Reporting violations according to the spectator phenomenon

Based on the results from Table (12), which indicates the classification of the indicators of reporting malpractice taking into account the spectator phenomenon, the variables are arranged based on their levels from top to bottom, and based on the classification made, a diagram titled "Model of indicators of reporting malpractice taking into account the spectator phenomenon" is prepared according to Figures (2 and 3). In this way, the index of political fraud identified as the first level is placed in the first level of the chart and similarly, the other dimensions are positioned in the subsequent levels of the chart. Based on this, the index of inappropriate organizational culture is placed at the lowest level and serves as the foundation of the model. Therefore, the improvement of the research model should start with these variables and then be extended to other variables. It is worth noting that with the transition from higher to lower levels, the influenceability of the indicators decreases, while their impact increases. It follows that, according to the results in the figures mentioned, the index for political fraud has the highest influenceability, and the index for inappropriate organizational culture has the highest impact among the indicators provided.

Dimension Clustering

In order to segment the criteria in the final achievability matrix, the steering effect and dependency should be calculated for each criterion. The steering effect of a criterion is the number of criteria that are affected by the criterion in question, including the criterion itself. The dependency power is the number of criteria that affect the criterion in question and lead to its achievement. Directional power and dependency power are categorized and used in the analysis of the MICMAC (Cross-Impact Matrix Multiplication Applied to Classification) matrix, in which the criteria are classified into four independent, dependent, linked, and independent groups (Azar et al., 2021). Therefore, based on Table (8), by summing the number of 1s in each row, the steering effect of each indicator is calculated, and by summing the number of 1s in each column, the dependency effect of each indicator is calculated, and the obtained values can be seen in Table (13).

Based on the figures obtained for the steering effect and dependence of each indicator, the indicators mentioned are now categorized into four clusters: autonomous, dependent, connected, and independent, and the steering-dependence matrix for the propensity for fraudulent reporting is shown in the diagram (4).

According to diagram (4), it can be observed that the first cluster consists of indicators with a weak steering effect and dependence. These variables are almost disconnected from the system as they have weak links, indicating an inappropriate organizational atmosphere in the first cluster, namely the autonomous cluster.

The dependent variables are located in the second cluster, which shows weak steering power but high dependency. Indicators such as the weakness of personality stability, political manipulation, and the lack of meaningful evidence are located in the dependent cluster. This means that any change in other indicators of fraud reporting based on the phenomenon of viewership can lead to changes in these indicators.

Table 13: driving Power and dependence power indicator Malpractice reporting by Spectator Phenomenon

Indicators	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Driving power	14	14	11	8	14	10	12	12	12	8	10	11	6	8
Dependence power	4	12	11	9	11	13	9	11	11	8	12	12	13	14

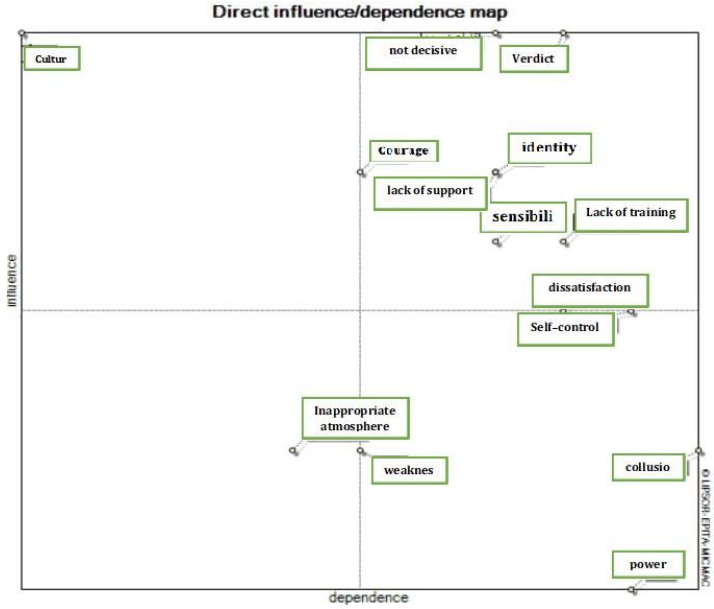

Figure 4: Matrix of driving power – dependence power

The third cluster consists of linkage indicators that have both a high steering effect and a high dependency. These indicators are critical due to their high steering effect and dependency, as any change to them can influence the system. In the present study, among the fraud reporting indicators based on spectator phenomenon and based on the steering and dependency strength identified for them, indicators such as decisiveness and willpower weakness, inadequate ethical judgment, lack of courage and boldness, organizational identity weakness, lack of legal and social support, low ethical sensitivity, lack of adequate training, and job dissatisfaction were classified into this cluster.

The fourth cluster consists of independent indicators that have a high steering effect and a low dependency. The indicator "Inappropriate organizational culture" is included in this cluster. It is considered a central and fundamental indicator that has a significant influence on the other indicators. It is worth noting that among the 14 determinant indicators of fraud reporting based on the phenomenon of viewership, inappropriate organizational culture was identified as the most influential and therefore the most fundamental indicator.

Conclusion

This study aimed to explore and model the factors influencing the reporting of malpractice within organizations, particularly in the context of the spectator phenomenon, using structural-interpretive modeling (ISM) and MicMac analysis. Through the analysis, we identified key factors spanning moral-cultural, individual-personal, and administrative-managerial dimensions, all of which significantly impact malpractice reporting behaviors.

The findings indicate that organizational culture plays the most critical role in influencing malpractice reporting, with inappropriate organizational culture identified as the most influential factor. This suggests that organizations with weak ethical foundations are more likely to struggle with effectively reporting and managing malpractice, a finding that is consistent across multiple international studies. However, in the context of Iran, this study emphasizes the importance of addressing specific challenges, such as lack of legal and social support and inadequate organizational identity, both of which are significant barriers to fostering a transparent and accountable environment.

Given that Iranian organizations are often characterized by hierarchical structures and rigid administrative processes, the findings suggest that reforms focusing on improving organizational

transparency and establishing stronger legal protections for whistleblowers are crucial. Moreover, as financial malpractice reporting is still underdeveloped in many Iranian institutions, there is a clear need for policy development that encourages internal reporting mechanisms, along with more robust training programs to improve awareness and competence in ethical decision-making. The spectator phenomenon, particularly the reluctance of individuals to report malpractice due to perceived inaction by others, highlights the importance of promoting individual responsibility and building a culture of active reporting. Organizations in Iran should prioritize initiatives that encourage employees to overcome these psychological barriers, thereby enhancing internal governance mechanisms.

The research results confirm, with slight deviations, the findings of the studies by (Kordestani & Rajabdorri, 2021), Namazi & Ebrahimi (2016), and Alleyne et al (2019).

In conclusion, while this research provides a detailed model for understanding the factors influencing malpractice reporting, its practical implications are most relevant in the Iranian context where cultural, legal, and organizational reforms are essential for improving transparency and accountability in financial reporting.

The following measures are proposed on the basis of the research findings

1. The elements of this model can be used by organizations such as the National Audit Office, the Court of Accounts, the Official Society of Certified Public Accountants, the Auditors Organization, and the Association of Internal Auditors; it is also suggested that more attention be paid to the elements of this model and ways to eliminate obstacles and problems, take effective steps to reduce financial violations and focus more on the phenomenon of spectators; also, there is no equivalent association in Iran for testing official fraud examiners, but given the importance of preventing financial fraud and corruption, it is suggested that those responsible pay attention to its implementation.

2. As the research findings show, internal reporting of financial violations is influenced by individual, ethical-cultural, administrative, and management factors, etc., which cause employees to play the role of a spectator when they observe or become aware of a violation and avoid taking social responsibility for preventing violations; therefore, a detailed description of how these structures and components work would lead to increased awareness and understanding of this issue. Cultural program agencies such as the Ministry of Culture and Islamic Guidance and centers such as the Islamic Propaganda Organization should plan, manage, and implement the right approach and definitely include it in their agenda.

3. Based on the findings, it is crucial for the management and officials of all companies to pay special attention to the phenomenon of spectators and how to deal with them. Therefore, the company should take measures to increase awareness and understanding of the spectator phenomenon; in this regard, it is recommended to create an organizational culture aimed at reporting fraud when any type of fraud is observed; and establish motivational as well as financial and non-financial incentive systems and provide a system for communicating alerts about violations so that employees can report this violation with full confidence in order to increase the reporting of violations.

In light of the review of this study, the suggestions for future research are as follows:

1) Determine a framework of effective factors for reporting violations in relation to the spectator phenomenon using a meta-synthesis approach.
2) Establish a ranking of effective factors for breach reporting with respect to the spectator phenomenon using the Analytic Hierarchy Process and Grey System Theory
3) Examine the impact of financial and non-financial motivators on the likelihood of reporting violations and perceived levels of responsibility.
4) Replicate the current study using the structural equation modeling technique.
5) It is also suggested to examine the interaction effects of the model components on the preventive and influential effects of the structures using the DEMATEL method.

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